

HALLIBURTON

iCem® Service

MALLARD EXPLORATION LLC

Ft. Lupton District, CO

For: Hans Cary

Date: Wednesday, January 20, 2021

Blue Teal FED 15-3-2HN

WELD COUNTY

Job Date: Wednesday, January 20, 2021

Sincerely,

Mike Loughran

Legal Notice

Disclaimer:

All information in this report is provided subject to the terms and conditions which govern the services provided by Halliburton. Halliburton personnel use their best efforts in gathering information and their best judgment in interpreting it, but any interpretation, research, analysis or recommendation furnished by Halliburton are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and empirical relationships and assumptions are not infallible, and with respect to which professionals in the industry may differ. iCem 3D Displacement results are used to understand how fluids intermix during a cement job. Simulation and 3D displacement results are not intended as and should not be used as a replacement for bond logs in determining top of cement. Current 3D model calculations are known to model more volume than the input volume for standard cases due to known calculation improvements required. For rotational cases, the modeled volume will be impacted by the same calculations impacting the standard cases, as well as additional constraints imposed to make the calculation time required operationally feasible. Therefore, until further notice, 3D displacement results should not be used for replacement of a bond log, or used as an identifier of top of cement. HALLIBURTON IS UNABLE TO GUARANTEE THE ACCURACY OF ANY CHART INTERPRETATION, RESEARCH ANALYSIS, OR JOB RECOMMENDATION and any interpretation or recommendation is not for use of or reliance upon by any third party. The customer has full responsibility for any of its decisions which are based on the information provided in this report.

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **BLUE TEAL FED 15-3-2HN** cement **PRODUCTION** casing job. A pre-job safety meeting was held before the job where details of the job were discussed, potential safety hazards were reviewed, and environmental compliance procedures were outlined.

Approximately 15 bbls of cement were returned to surface.

Halliburton maintains a continuous quality improvement process and appreciates any comments or suggestions that you may have. Halliburton again thanks you for the opportunity to perform service work on this well. We hope to be your solutions provider for future projects.

Respectfully,

Halliburton Fort Lupton

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Customer: MALLARD EXPLORATION LLC
 Job: Blue Teal 15-3-2HN
 Case: Blue Teal Fed 15-3-2HN | SO#: 906927222

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	DS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	CALL OUT	Call Out	1/19/2021	19:15:00	USER					CREW CALLED OUT AT 1915 HRS 1/19/2021, REQUESTED ON LOCATION 0230 HRS 1/20/2021.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	1/19/2021	22:15:00	USER					CREW DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION
Event	3	Crew Leave Yard	Crew Leave Yard	1/19/2021	22:30:00	USER					CREW LEAVES YARD
Event	4	Arrive At Loc	Arrive At Loc	1/20/2021	00:30:00	USER					END JOURNEY MANAGEMENT. MEET WITH CO. WANT TO DISCUSS JOB: SURFACE CASING- 9.625" 36 LB/FT @ 1979', 5.5" CASING: 20 LB/FT TOTAL 18,888.58', 8.5" HOLE. TD 18891', 1.1' SHOE TRAC. TVD- 6,277'. PUMP FRESH WATER DISPLACEMENT WITH 20 GALLONS MMCR FIRST 40 BBLs, 5BBL WET SHOE
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	1/20/2021	02:00:00	USER					HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP, AND WEATHER.

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(v. 5.1.101.0)

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Event	Description	Date	Time	User	Duration	Cost	Material
6	Rig-Up Equipment	1/20/2021	02:10:00	USER			CREW STAGED EQUIPMENT AND RIGGED UP BULK, IRON AND WATER HOSES TO PERFORM JOB.
7	Pre-Job Safety Meeting	1/20/2021	05:00:00	USER	0.00	-28.00	SAFETY MEETING WITH HALLIBURTON, AND RIG PERSONNEL. CREW COMMUNICATED POTENTIAL SAFETY HAZARDS, AND JOB DETAILS.
8	Start Job	1/20/2021	05:34:06	COM6	8.22	0.00	BEGIN RECORDING DATA
9	Drop Bottom Plug	1/20/2021	05:34:17	COM6	8.22	0.00	DROP INNOVEX BOTTOM PLUG
10	Test Lines	1/20/2021	05:36:28	COM6	8.32	0.00	PRESSURE TEST 4500 PSI
11	Pump Spacer 1	1/20/2021	05:42:53	COM6	8.19	0.00	50 BBL TUNED PRIME SPACER, 11.5 PPG, 3.71 YIELD, 23.58 GAL/SACK
12	Pump Cement	1/20/2021	05:51:17	COM6	12.10	6.70	2950 SACKS SBMCEM ELASTICEM, 840.63 BBL, 13.2 PPG, 1.6 YIELD, 7.65 GAL/SACK
13	Shutdown	1/20/2021	06:37:41	USER	13.18	9.20	SHUTDOWN TO TIGHTEN WING HALF
14	Shutdown	1/20/2021	07:32:48	COM6	11.28	0.00	SHUTDOWN TO WASH PUMPS AND LINES
15	Drop Top Plug	1/20/2021	07:41:08	COM6	8.04	0.00	PLUG BY INNOVEX
16	Pump Displacement	1/20/2021	07:41:50	COM6	8.03	0.00	419 BBL FRESH WATER DISPLACEMENT, FIRST 40 BBL HAS 20-GAL MICRO MATRIX RETARDER

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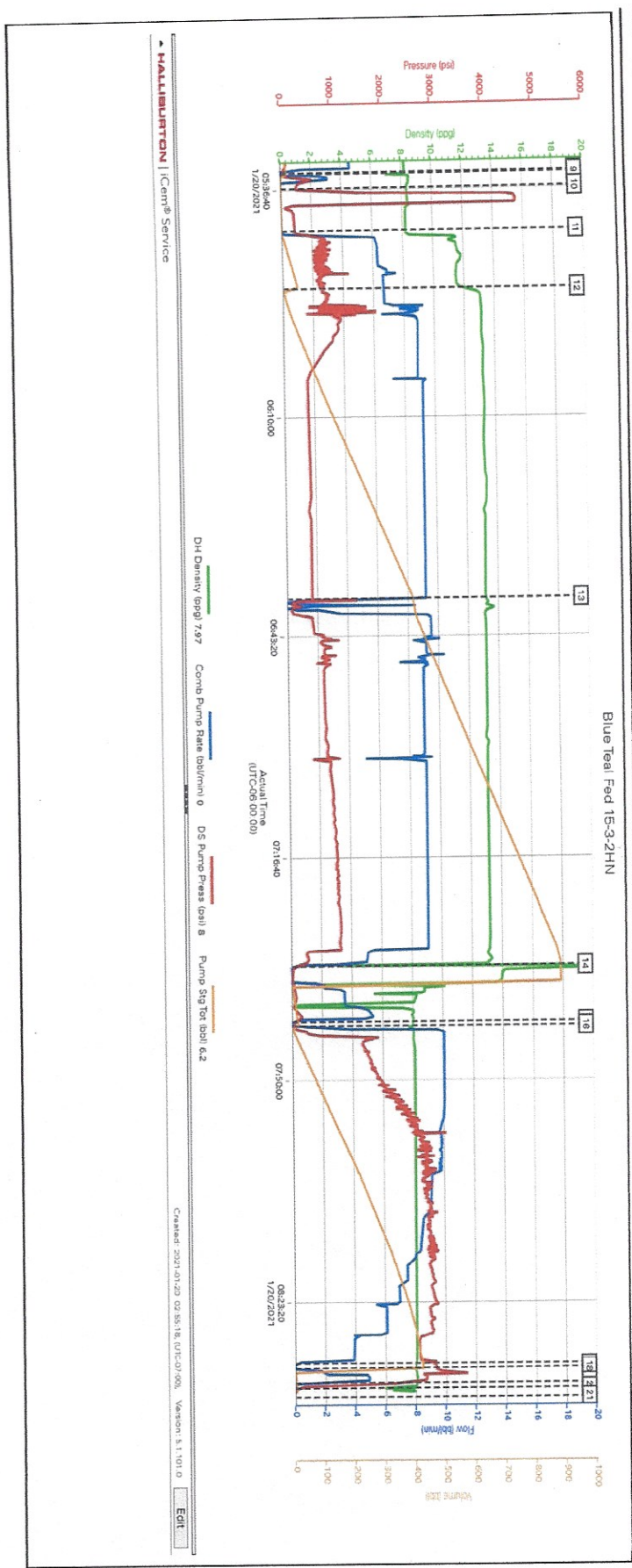
Event 17	Bump Plug	Bump Plug	1/20/2021	08:32:50	COM6	8.01	0.00	2786.00	423.80	FCP 2500 PSI @ 4 BBL/MIN. BUMP PRESSURE 2800 PSI. SEE SPACER AT 360 BBL. 15 BBL CEMENT TO SURFACE
Event 18	Pressure Up	Pressure Up	1/20/2021	08:33:31	USER	7.98	0.00	2816.00	423.80	PRESSURE UP 3580 TO GO THROUGH SHOE. PUMP 5 BBL WET SHOE @ 5 BBL/MIN
Event 19	Other	Other	1/20/2021	08:35:47	COM6	7.99	0.00	2227.00	6.20	CHECK FLOATS, FLOATS HOLD, 3 BBL BACK
Event 20	End Job	End Job	1/20/2021	08:36:37	COM6	6.94	0.00	47.00	6.20	STOP RECORDING DATA
Event 21	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	1/20/2021	08:38:00	USER					DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event 22	Rig-Down Equipment	Rig-Down Equipment	1/20/2021	08:45:00	USER					RIG DOWN BULK AND MIXING EQUIPMENT
Event 23	Rig-Down Completed	Rig-Down Completed	1/20/2021	10:00:00	USER					ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL, AND LOCATION WAS CLEAN.
Event 24	Crew Leave Location	Crew Leave Location	1/20/2021	10:30:00	USER					THANK YOU FOR USING HALLIBURTON - MIKE LOUGHRAN AND CREW.

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3.0 Attachments

3.1 Blue Teal Fed 15-3-2HN-JOB CHART.png



The Road to Excellence Starts with Safety

Sold To #: 380921	Ship To #: 3916970	Quote #:	Sales Order #: 0906927222
Customer: MALLARD EXPLORATION LLC-EBUS		Customer Rep: HANS CARY	
Well Name: BLUE TEAL	Well #: 15-3-2HN	API/UWI #: 05-123-48417-00	
Field: WILDCAT	City (SAP): RAYMER	County/Parish: WELD	State: COLORADO
Legal Description: NW NE-22-8N-60W-600FNL-2323FEL			
Contractor: CYCLONE		Rig/Platform Name/Num: CYCLONE 37	
Job BOM: 7523 7523			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA\HB41307		Srvc Supervisor: Michael Loughran	
Job			

Formation Name			
Formation Depth (MD)	Top		Bottom
Form Type			BHST
Job depth MD	18888.58ft		Job Depth TVD
Water Depth			Wk Ht Above Floor 5
Perforation Depth (MD)	From		To

Well Data

Description	New / Used	Size in	ID in	Weight lbm/ft	Thread	Grade	Top MD ft	Bottom MD ft	Top TVD ft	Bottom TVD ft
Casing	0	9.625	8.921	36			0	1988	0	1988
Casing	0	5.5	4.778	20			0	18888	0	6277
Open Hole Section			8.5				1988	18888	1988	6277

Tools and Accessories

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe	5.5				Top Plug	5.5	1	3RD
Float Shoe	5.5			18888.58	Bottom Plug	5.5	1	3RD
Float Collar	5.5			18887.48	SSR plug set	5.5		
Insert Float	5.5				Plug Container	5.5	1	HES
Stage Tool	5.5				Centralizers	5.5		

Fluid Data

Stage/Plug #: 1

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
1	Tuned Prime Cement Spacer Base - RKS/SE	TUNED PRIME CEMENT SPACER SYS	50	bbl	11.5	3.71		5	
	35.6590 gal/bbl	FRESH WATER							
	0.10 gal/bbl	D-AIR 3000L, 5 GAL PAIL (101007444)							
	4 lbm/bbl	SEM-93P, 35 LB SACK - (1023977)							
	4 lbm/bbl	SEM-94P, 35 LB SACK - (1023987)							
	1 lbm/bbl	FE-2, 2000 LB BAG - (1005549)							
	151.2270 lbm/bbl	BARITE, BULK (100003681)							

Cementing Job Summary

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
2	ElastiCem	SBM CEM ELASTICEM™ SYS		sack	13.2	1.6		8	7.65
7.65 Gal		FRESH WATER							
0.1250 lbm		POLY-E-FLAKE (101216940)							
0.35 %		SCR-100, 1200 LB BAG - (1126328)							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
3	MMCR Displacement	MMCR Displacement	40	bbl	8.33			8	
0.50 gal/bbl		MICRO MATRIX CEMENT RETARDER, 5 GAL PAIL (100003781)							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
4	Displacement	Displacement	379	bbl	8.33			8	
Cement Left In Pipe	Amount	0 ft			Reason			WET Shoe	
Mix Water:	pH 7	Mix Water Chloride:	LESS 200 ppm		Mix Water Temperature:		78°F		
Cement Temperature:		Plug Displaced by:	8.33 lb/gal		Disp. Temperature:		70 °F		
Plug Bumped?	Yes	Bump Pressure:	2800 psi		Floats Held?		Yes		
Cement Returns:		Returns Density:			Returns Temperature:				
Comment 50 BBL SPACER AND 15 BBL CEMENT TO SURFACE									